

# Wireless Access Solutions

Bringing the Power of Network Virtualization to Wi-Fi – vWLAN



# Next Generation Wireless Solution

*Today's enterprise communicates wirelessly. Users now carry multiple devices that need to connect to the enterprise Wi-Fi® network from any point in the building and across the campus. Wireless connectivity in the enterprise has moved from the access of convenience to the access of choice. Traditional enterprise wireless networks were designed before the explosion of Wi-Fi enabled devices and are now straining under the demand to support more devices, more access points, wider mobility, and greater bandwidth. A more scalable, cost-effective solution has emerged that leverages the power of virtualization to solve the scale challenges of the enterprise wireless network.*

## Network Virtualization

Most traditional WLAN vendors build bigger and bigger controllers, and with the advent of higher data speeds and more users, the burden of the controller only becomes greater. ADTRAN® took a different route, unshackling the wireless network from the limitations of an expensive physical controller. ADTRAN merged the power of virtualization with the wireless network—creating the next-generation enterprise wireless solution—Bluesocket® virtual Wireless LAN (vWLAN).

The Bluesocket vWLAN® solution eliminates scaling constraints imposed on the enterprise wireless network by eliminating the hardware controller, and virtualizing the management and control function of the WLAN to run on a hypervisor (VMware®). This fundamental shift brings extraordinary benefits.

## Scalability

Most hardware-based controllers can support approximately 150 Access Points (APs) and 4,000 users. By separating and virtualizing the management and control plane from the data plane, vWLAN breaks the constraints of hardware controllers allowing for massive scale. A single instance of vWLAN can support thousands of APs and users, across multiple locations or even multiple customers. Scalability of the vWLAN Virtual Appliance (hypervisor) is based on the virtual machine's specifications (CPU/Cores and Memory).

## Security

Virtualization not only unlocks cost effective scalability but also enhances the security of enterprise wireless networks. Traditional controller-based networks have two security vulnerabilities. First, unwanted and

potentially harmful traffic actually enters the LAN through the thin, unintelligent access point. Only after the traffic reaches the controller is the traffic scanned and discarded. Why bring unwanted and potentially harmful traffic onto the network? vWLAN provides a more secure solution. vWLAN uses intelligent APs that operate a stateful firewall. Unwanted traffic is turned away at the AP before it enters the network and becomes a security problem.

Second, a centralized physical controller is a target for hackers. This device is in the data path and therefore serves as a convenient point to intercept traffic. vWLAN eliminates this vulnerability by keeping the data sessions on the LAN. Only control traffic is centralized. And this centralization occurs in the enterprise data center as opposed to a single server.

## Reliability

ADTRAN's vWLAN brings wireless reliability to a whole new level. In vWLAN, the user data stream or data plane is separated from the control information about the data session. This separation of the control plane and data plane increases reliability. In the conventional controller-based approach, any failure in the control plane interrupts the data plane. In vWLAN, the data session is the priority. The control plane can be completely lost and the user data sessions remain intact.

This separation of control and data allows vWLAN to support hitless failovers. A secondary virtual control instance can back up the primary control. If an access point loses connection with the primary virtual control instance, it will realign with the secondary control. This re-establishment of the control plane takes place with zero packet loss to any of the data sessions.



## 802.11ac-ready

The next-generation wireless LAN standard – 802.11ac, is just around the corner bringing Gigabit speeds to the wireless network. This will present a similar challenge as the introduction of 802.11n—the faster AP throughput requires a forklift upgrade to the backend hardware controllers to handle the higher throughput.

vWLAN breaks this upgrade cycle. With vWLAN's distributed data plane architecture, customers do not need to upgrade controllers ever again, providing a solution that is future proof ensuring customers can confidently adopt 802.11ac when it arrives.

## Wireless APs

ADTRAN's Bluesocket family of high-performance APs is the perfect fit for enterprises, educational institutions, hospitality, retail, and healthcare providers who are looking to move their organizations to a pervasive mobility environment. The Bluesocket portfolio of 1800 and 1900 Series of enterprise-class APs are completely plug-and-play requiring no manual configuration. They include MIMO, beam-forming and high RF transmit power to deliver industry leading throughput and performance. Whether you want to expand wireless coverage in your office or deploy across an entire campus, the Bluesocket APs are designed to meet your needs.



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# Virtualizing the Wireless Network

*ADTRAN's next-generation vWLAN architecture brings all the benefits of virtualization to the wireless network. vWLAN unifies wireless and existing wired networks to produce a truly integrated and optimized networking solution. vWLAN enables customers to dramatically reduce the cost of deploying and operating large-scale Wi-Fi networks while providing wired-equivalent performance to wireless users, with seamless roaming and enterprise-class security and policy management.*

## Controller-less Architecture

The Bluesocket vWLAN was built from the ground-up to solve the challenges associated with hardware-based controllers. vWLAN's unique distributed, out-of-band, controller-less architecture introduces the concept of splitting the management and control plane from the data plane. vWLAN centralizes management and control in the data center (on a hypervisor), and distributes data with intelligent APs that enforce policies at the edge of the network. With vWLAN, there are no single points of failure, bottlenecks, traffic u-turns, or scalability concerns associated with hardware-based controller

## Unprecedented Wireless Security

The Bluesocket vWLAN solution was designed from the beginning with security in mind from both the client side and network side of the system. The Bluesocket APs control the data plane and include a built-in stateful firewall that enforces security policies at the edge to turn away malicious traffic before it hits the LAN. In addition, with Wireless Intrusion Detection System (W-IDS) as a standard feature, comprehensive user authentication options, support for multiple encryption protocols, combined with role-based authentication, Bluesocket vWLAN ensures a secure wireless environment.

## Optimized Performance

A typical hardware controller has a fixed backplane capacity, which limits the available throughput to the APs that the controller manages. With vWLAN's unique distributed data architecture, data is switched at the AP and system capacity is no longer dictated by the backplane capacity. Rather, it is determined by the aggregate throughput of the APs. This provides an additional advantage, as there is no need for a forklift upgrades as new 802.11 standards come into play. The vWLAN architecture is 802.11ac-ready, providing you a future-proof solution and increased Return on Investment (ROI).

Equipment	APs	Users	Tenants
Appliance (Hardware)	1,500	48,000	50
Virtual Appliance (VMware)	1,500+*	48,000+*	50

*\*Scalability (APs/Users) of the vWLAN Virtual Appliance is based on the VMware server's specifications (CPU/Cores, Memory). See page #3 for minimum resource requirements to support 1,500 APs.*

## Cloud-Based Management

Virtualization also enables cloud-based management and control of APs across multiple locations, anywhere in the networked world. Cloud management ensures consistent policy management and seamless mobility across all locations.

The ability to manage via the cloud, allows vWLAN to offer a choice of deployment options—in a private cloud (within your data center), as a hosted WLAN or via ADTRAN ProCloud<sup>SM</sup> Wi-Fi, a worry-free, cloud-hosted and fully managed offering.

## Lower TCO

By virtualizing the centralized management and control function and making it available on a hypervisor, like VMware, ADTRAN removes 100 percent of the controller hardware, vastly reducing capital costs and TCO. This in conjunction with the other benefits that virtualization provides like, speedy deployments, infinite scale and virtual consolidation across the organization, makes vWLAN on VMware the most powerful and complete choice for an efficient, secure, high performing and cost-effective wireless LAN solution.



## vWLAN Benefits

- **Seamless, Cost-effective Scaling:** vWLAN separates the control and data plane. This allows for software-driven scaling and greater capacity. Adding more APs (data plane) does not drive an increase in the control plane.
- **Centralized Management and Control:** Virtualization permits a single vWLAN software instance to control thousands of APs located anywhere in the world.
- **Network Security at the Edge:** vWLAN takes advantage of intelligent APs, with built-in firewalls, to enforce security policies at the edge.
- **Inherent Reliability:** Separating the control and data planes, vWLAN ensures that an interruption in the control plane does not affect user connectivity. vWLAN can be configured in a high availability arrangement such that a failover can take place with “zero” packet loss.
- **Lower TCO:** By eliminating hardware controllers, both the initial CAPEX and the associated OPEX is removed, reducing TCO.
- **Flexible Deployment Options:** Virtualization also provides a choice of deployment options—within your data center (private cloud), hosted WLAN or via ADTRAN’s ProCloud Wi-Fi.

# Scalability and Simplicity Come Together

*Remove the hardware controller from the wireless LAN and suddenly you remove complexity and add scalability. By virtualizing the control of the wireless network, some amazing things happen. No longer is an enterprise tethered to the LAN for control of the wireless network. Control can happen anywhere. Need to add another AP or deploy a new site? No problem with vWLAN, an access point can be anywhere in the world. One instance of vWLAN can control and manage a worldwide deployment of APs.*

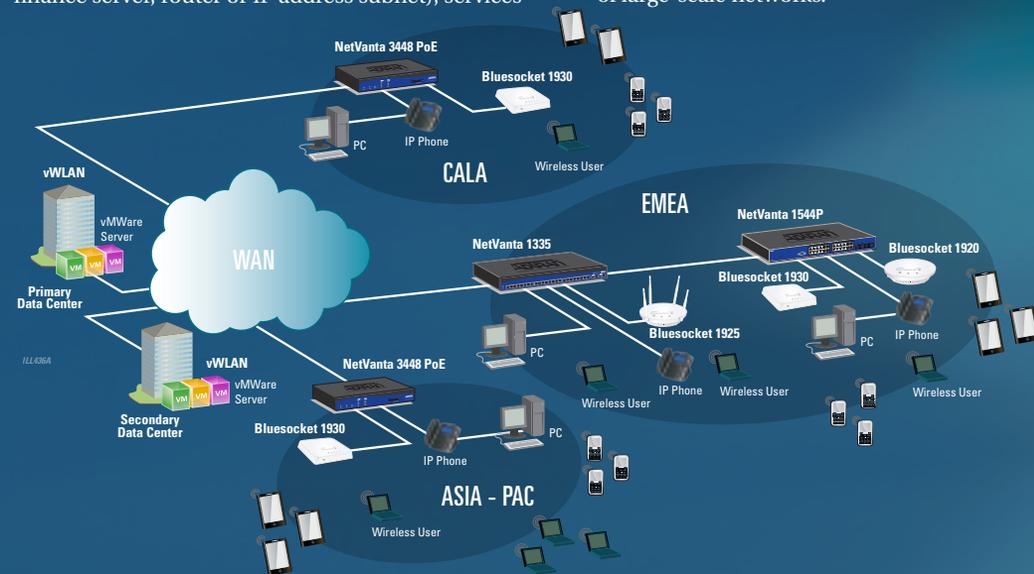
## Manage from Anywhere on Any Device

Bluesocket vWLAN's unique architecture involves separation of the management and control plane from the data plane—these functions are virtualized and placed in a VMware environment in your data center. This enables network administrators to configure, control and manage APs located anywhere in the world, via a public or private cloud. This also ensures consistent policy management, seamless roaming, and the ability to trouble-shoot APs without physically traveling to each location. In addition, with an HTML5-based administrative interface users can access vWLAN from any iOS-, Android or Windows-based mobile device.

## Flexible Role-based Access Control and Policy Enforcement

ADTRAN's unique role-based approach provides convenient management of privileges for different categories of users. The vWLAN solution matches user permissions to your organizational structure. IT Administrators can define destinations (such as a finance server, router or IP address subnet), services

(such as HTTP, FTP, POP3), user locations, time/date schedules, and available bandwidth to control user access to each resource. Multiple service and destination groups simplify policy creation and reduce the complexity and cost of the administration of large-scale networks.



## High Availability

ADTRAN's High Availability (HA) solution is designed to provide uninterrupted wireless LAN service and a hitless failover "Zero Packet Failover Event". This high availability scheme is based on installing a primary vWLAN software and a hot-standby vWLAN software. Both vWLAN software can be deployed anywhere as long as ADTRAN's Bluesocket APs have connectivity to them (same building, across campus or over the Internet). If a Bluesocket AP were to fail to communicate to the primary vWLAN software it will seamlessly failover to the secondary vWLAN software, guaranteeing that existing authorized users will not lose a single packet and new users will be redirected to the secondary vWLAN software for authentication.

## Unified Access Throughout the Enterprise

Bluesocket vWLAN offers the industry's first software-enabled support for both wired and wireless users. This is a software upgrade option that allows integrated management and control of all users irrespective of method of access— Bluesocket APs, wired ports or even from any third-party AP. This simplifies administration, and enables an enterprise to create a truly unified wireless and wired network providing a seamless user experience, and consistent authentication irrespective of a user's access method.



## Key Features

- **Secure Mobility:** Gives users of mobile devices wireless access to corporate networks and the Internet while moving across subnets.
- **Flexible Role-based Access Control and Policy Enforcement:** Provides convenient management of privileges for different categories of users.
- **Universal WLAN Authentication:** Provides comprehensive authentication options utilizing username/password combinations or digital certificates, with the authentication database held locally or centrally in RADIUS, LDAP, NT Domain servers, or Windows Active Directories.
- **VoIP:** Security, maintained QoS, and fast roaming for VoIP.
- **High Availability:** Seamless failover with zero packet loss, no matter the location of the backup data center.
- **Mobile Friendly:** Supports Apple's Bonjour-based services and Captive Network Assistant (CNA), and Microsoft's Network Connectivity Status Indicator (NCSI).



## Enabling a profitable, Cost-Effective Wireless LAN Service

*The Bluesocket vWLAN's unique virtualized, cloud-based control and management architecture is also revolutionizing wireless LANs by enabling service providers to offer a hosted wireless LAN service leveraging their existing data center and virtualization investments—resulting in further market penetration, cost savings, and new revenue streams.*

### Multi-tenant Support

ADTRAN enables service providers to take hosted WLAN services to the next level with multi-tenant support—configure, control and manage users and APs for multiple tenants on a single Bluesocket vWLAN virtual software instance. With the vWLAN's virtualized infrastructure, service providers can now offer a cost effective, profitable wireless LAN service.

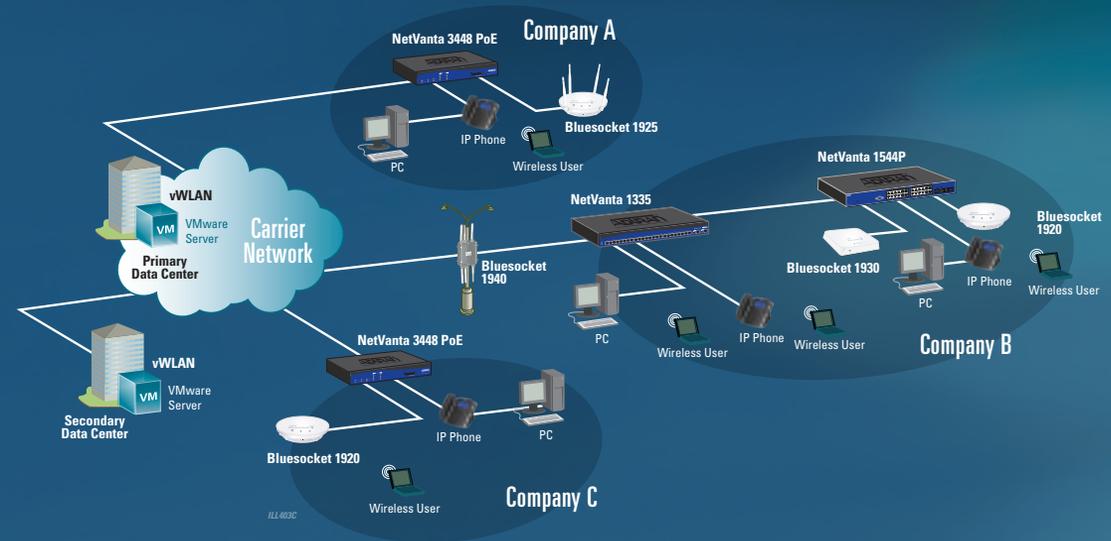
### Simplified Integration

Bluesocket vWLAN Multi-tenant provides simplified integration allowing service providers to streamline operations and generate revenue faster. Bluesocket vWLAN provides APIs that allow integration with the existing provisioning system to automate creation of tenants and tenant administrators; SNMP traps allow simplified integration with the service provider's monitoring system; and Bluesocket vWLAN integrates with a carrier's or tenant's on-premise Authentication Server (802.1x/EAP Server, Radius or LDAP). In addition, service providers can setup site-to-site secure links (VPN or MPLS) with customers for monitoring and troubleshooting.

### Granular, Customizable Administrator Access

The Bluesocket vWLAN's multi-tenant architecture allows the service provider to configure domain (tenant) administrators with varying degrees of access. This customizable approach allows the platform administrator (service provider admin) to configure

all system-related items and create new domain administrators who have responsibility for a certain domain or tenant. These domain administrators are completely isolated from other domains, ensuring the highest levels of data privacy.



## Flexible Management Options

Not all clients are alike and each client may require different levels of control over their wireless LAN environment. With Bluesocket vWLAN Multi-tenant, you can offer:

- **Hosted WLAN:** Control and management software resides in the service provider cloud and can be subdivided into domains; the administration rights for each end-user is configured by the service provider.
- **Managed WLAN:** The control instance resides on the customer premises, but the service provider takes complete responsibility for managing the client's WLAN environment. A backup instance of the control software can reside in the service provider cloud, in an HA configuration, to ensure continuous WLAN operations.

## Reports and Alerts

Bluesocket vWLAN provides multi-level reporting based on user role. Clients can view detailed reports on the health of each AP, and can create custom dashboards that provide at-a-glance view of the health of the system. Service providers in turn have the ability to view the health of client environments as well as overall platform-level health information.



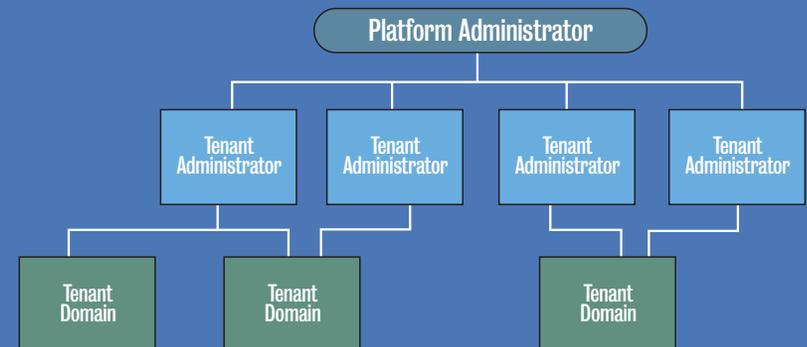
## Multi-Region Support

Bluesocket vWLAN and the Bluesocket APs have been approved for use in all regions of the world. This allows service providers to address the needs of multi-national corporations, with offices in different countries, with a seamless, consistent wireless LAN offering.

## Key Features

- Cloud-based management and control.
- Supports multiple cloud connectivity options—public, private or hybrid.
- Secure TLS communication for control path .
- Supports multiple deployment models.
- Multi-level administration hierarchy.
- Simplified integration into existing Network Operations Center (NOC) environment.
- Security enforced at the edge.
- Complete isolation between NOC and client environments.
- Real-time alarms, logs and system health dashboards.
- Robust multi-level reporting.
- Business continuity and high availability.
- Simplified upgrades.

## Multi-tenant Administrator Model



# ADTRAN's ProCloud Wi-Fi

Wireless connectivity is becoming a critical business requirement and, organizations are challenged to not only handle the growing number of employee-owned mobile devices, but also to connect customers and guests to the Wi-Fi networks. ADTRAN offers ProCloud Wi-Fi a “No Worry” fully managed, business-class Wi-Fi service, built on Bluesocket vWLAN. ProCloud Wi-Fi services are flexible and scalable, ensure a secure, always-on wireless network, provide proactive network monitoring and monthly management reports, and include turn-key services to reduce IT support burdens.

## “No Worry”, Fully Managed Service

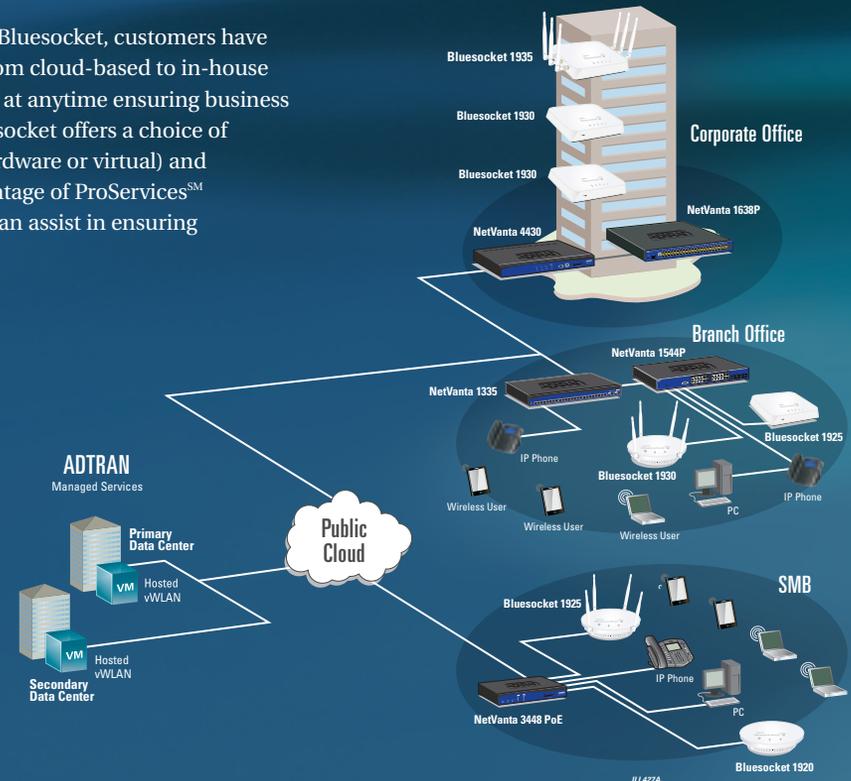
Now businesses can benefit from a “no worry”, fully managed wireless network with ProCloud Wi-Fi, that includes proactive 7x24 monitoring, technical issue resolution, advance hardware replacement, and turn-key services to reduce IT support burdens. Businesses can offload the day-to-day Wi-Fi network management from IT, allowing them to dedicate themselves to other core business goals.

## Guaranteed 99.99% Uptime

The wireless network has moved from one of convenience to becoming a critical part of the business. Having a reliable, always-on wireless network is now a must. ProCloud Wi-Fi ensures businesses have an always-on wireless network with a High-Availability (HA), redundant data center infrastructure, with guaranteed 99.99% uptime.

## Freedom to Migrate

With ProCloud Wi-Fi and Bluesocket, customers have the freedom to migrate from cloud-based to in-house hosting and management at anytime ensuring business continuity. ADTRAN Bluesocket offers a choice of management options (hardware or virtual) and businesses can take advantage of ProServices<sup>SM</sup> technical resources who can assist in ensuring a smooth migration.



### Turn-Key Solutions

ADTRAN ProServices offers turn-key wireless solutions including optional ProStart services (planning and design, and implementation) with ProCloud Wi-Fi services (hosting, 24x7 monitoring, technical troubleshooting, NBD hardware replacement and support). Combined with ADTRAN's comprehensive portfolio of switches, routers and cloud connectivity products, enterprises have a one-stop solution for enterprise-class networking solutions.

### Private Label Option

In addition, ADTRAN offers ProCloud Wi-Fi Private Label empowering partners to deliver their own branded managed services, relying on ProServices for hosting infrastructure and back end support. This enables the partner to incorporate a Wi-Fi managed service into their offerings, gain new customers and a new revenue stream without the burden of training and certifying additional staff.



### ProCloud Wi-Fi Features

- A Worry-free, fully-managed business-class Wi-Fi, built on Bluesocket vWLAN.
- Flexible and scalable solution, provides a secure, reliable wireless network, with 24x7 network monitoring and proactive issue resolution.
- An always-on network with 99.99% guaranteed uptime.
- Unmatched security built-on Bluesocket vWLAN's architecture that detects and prevents malicious threats from entering the network.
- Includes priority technical support response times and advance hardware replacement.
- Choice of high-performance 802.11n access points.
- Guaranteed quality backed by ADTRAN's world-class support organization.

# High-Performance, Plug-and-Play Access Points

*ADTRAN's Bluesocket family of high-performance APs is the perfect fit for enterprises, educational institutions, hospitality, and healthcare providers who are looking to move their organizations to a pervasive mobility environment. The Bluesocket portfolio of 1800 and 1900 series of enterprise-class APs are completely plug-and-play requiring no manual configuration, and include MIMO, beam-forming and higher transmit power and receive sensitivity to deliver industry leading throughput and performance. Whether you want to expand wireless coverage in your office, or deploy across an entire campus, the Bluesocket APs are designed to meet your needs.*

### Comprehensive Portfolio for Multiple Deployment Scenarios

The Bluesocket 1800 and 1900 series include a comprehensive suite of 802.11n APs that range from cost-effective, smoke detector style APs to industrial-grade, weatherized outdoor APs, offering the flexibility to meet multiple deployment scenarios and budgets.

Whether you are looking to deploy a cost effective, yet high performance in-building wireless network or support a large convention center with blanket wireless coverage or offer campus-wide coverage, the Bluesocket line of APs provides maximum coverage and performance at the right price point.

### Higher Performance Wireless Solutions

The Bluesocket suite of high-performance indoor and outdoor APs feature Dual Radios with two streams or three streams, providing data rates up to 450 Mbps per radio (up to 900 Mbps per AP). In addition, the Bluesocket APs offer higher receive sensitivity on both the 2.4 GHz and 5 GHz radios to compensate for Bring Your Own Device (BYOD) type mobile devices such as smartphones and tablets that have a fraction of the transmit power of traditional laptops.

### Zero Touch, Plug-and-Play Deployment

ADTRAN's Bluesocket APs are completely plug-and-play and self-configuring, requiring no manual configuration, ensuring faster deployment of your wireless network.

### Unmatched Security at the Edge

The Bluesocket family of APs includes a built-in stateful firewall that enforces security policies at the edge to turn away malicious traffic before it hits the LAN. In addition, with Wireless Intrusion Detection System (W-IDS) as a standard feature, comprehensive user authentication options, support for all encryption protocols, combined with Bluesocket vWLAN's role-based authentication, ensures a secure wireless environment.



#### Bluesocket 1800/1840

- Dual-band dual-radio, 802.11a/b/g/n, Indoor APs
- Six internal MIMO antennas (1800)
- Six external RP-SMA connectors (1840)
- 2x3:2 with data rates up to 300 Mbps per radio (600 Mbps per AP)
- Powered by 802.3af compliant PoE



#### Bluesocket 1920/1925

- Dual-band, dual-radio, 802.11a/b/g/n, Indoor APs
- Four internal MIMO antennas (1920)
- Four external RP-SMA connectors (1925)
- 2x2:2 with data rates up to 300 Mbps per radio (600 Mbps per AP)
- Powered by 802.3af compliant PoE

## DynamicRF Management

The Bluesocket APs incorporate DynamicRF™ that ensures your entire wireless network is setup with the right balance of channels and power. DynamicRF reduces the effort to setup and maintain your wireless network—the system detects any non-optimal environmental conditions, and can automatically adjust RF parameters, or provide administrators with a recommended list of changes.

## Smart Bandwidth Management

Leveraging ADTRAN's technology leadership, the Bluesocket APs offer many Class of Service (CoS)/QoS components including granular bandwidth management, Wi-Fi Multimedia (WMM) enabled packet prioritization, and packet remarking, to provide the highest level of performance.



## Key Features

- Plug and Play deployments with “Zero-Touch” configuration.
- High Performance 802.11n MIMO with up to three spatial streams.
- Cloud managed for global scale with centralized control.
- Support for high-density deployments with configurable limits on number of associated clients per radio.
- Supports multiple deployment scenarios.
- Unmatched Security with built-in Firewall, enhanced authentication and encryption, and W-IDS.
- Supports fast roaming.
- Granular bandwidth management to optimize performance for specific devices.
- Backed by ADTRAN's world class support network.



### Bluesocket 1930/1935

- Dual-band dual-radio, 802.11a/b/g/n, Indoor APs
- Six internal MIMO antennas (1930)
- Six external RP-SMA connectors (1935)
- 3x3:3 with data rates up to 450 Mbps per radio (900 Mbps per AP)
- Powered by 802.3af compliant PoE



### Bluesocket 1940

- Dual-band dual-radio 802.11a/b/g/n
- Outdoor AP with six external N-type connectors
- Ruggedized enclosure that's fully weather resistant
- 3x3:3 with data rates up to 450 Mbps per radio (900 Mbps per AP)
- Powered by 802.3at compliant PoE

*“We needed a solution that would allow us to upgrade to 802.11n technology, accommodate the proliferation of devices hitting our network, and allow expansion cost-effectively and efficiently across remote sites.”*

**Douglas Tamasanis, Senior Director of IT**



# Bluesocket APs Comparison Matrix



Model	BSAP 1800/1840	BSAP 1920/1925	BSAP 1930/1935	BSAP 1940
Type	Indoor	Indoor	Indoor	Outdoor
Deployment Scenario	High density – offices, schools, hospitals, retail stores	High density – offices, schools, hospitals, retail stores	Ultra high density – indoor arenas, conference centers, hotel lobbies, libraries	Ultra high density outdoors – warehouses, college commons, outdoor malls, harsh weather environments
Radio Specification	2x3:2 Dual Radio 802.11a/b/g/n, MIMO	2x2:2 Dual Radio 802.11a/b/g/n, MIMO	3x3:3 Dual Radio 802.11a/b/g/n, MIMO	3x3:3 Dual Radio 802.11a/b/g/n, MIMO
Antennas	1800 – Six internal antennas 1840 – Six external connectors	1920 – Four internal antennas 1925 – Four external connectors	1930 – Six internal antennas 1935 – Six external connectors	1940 – Six external connectors
Throughput	600 Mbps	600 Mbps	900 Mbps	900 Mbps
Physical Profile	Slim profile, mounts flush to drop ceiling	Ultra-slim, smoke detector style, round profile	Ultra-slim, square profile, mounts flush to drop ceiling	Rugged industrial design, weather resistant, outdoor
Dimensions/Weight	8 in. x 8 in. x 2 in. (W x D x H)/2 lbs	DIA ~6.5 in. x H 1.5 in./.44 lbs	6.5 in. x 6.5 in. x 1.5 in.(W x D x H)/1.25 lbs	L ~10 in. x W 8 in. x H 3 in./3.2 lbs
Power	802.3af PoE	802.3af PoE	802.3af PoE or 802.3at PoE+	802.3at PoE+
Enclosure	Plenum rated	Plenum rated	Plenum rated	Ruggedized, weather resistant
Warranty	1 year hardware	Limited Lifetime	Limited Lifetime	1 year hardware



# Re-inventing the Network.

ADTRAN, Inc. is a leading global provider of networking and communications equipment. ADTRAN's products enable voice, data, video and Internet communications across a variety of network infrastructures. ADTRAN solutions are currently in use by service providers, private enterprises, government organizations, and millions of individual users worldwide.

## Technical Questions

888-423-8726

[www.adtran.com/support](http://www.adtran.com/support)

## Where To Buy

888 423-8726

[www.adtran.com/where2buy](http://www.adtran.com/where2buy)

## Training and Certification

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## ProServices

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## Simple, Reliable, and Affordable

When you need a networking solution that fits the unique connectivity requirements of your business, ADTRAN is the smart alternative. Our product portfolio offers a breadth of solutions, including a product suite that is tailored to the specific needs of SMB and distributed enterprise customers. With ADTRAN's award-winning and innovative switches, routers, multi-service access routers, wireless LAN solutions, VPN solutions, IP Business Gateways and Unified Communications products, it is easy to find a quality solution that is perfect for your specific network needs.

ADTRAN products are backed by industry-leading warranties and best-in-class technical support from our team of degreed engineers. As a TL 9000 3.0 and ISO 9001:2000 certified supplier supporting next-generation quality standards, the company maintains in-house labs for reliability, component and compliance testing—all with a focus toward customer satisfaction.

## High-touch Customer Support and Training

### ■ ProServices for Complete Lifecycle Support.

ADTRAN's ProServices is your single source for complete lifecycle support, from planning through implementation to ongoing support and management. The ProServices portfolio includes standard solutions with per product pricing as well as custom ProServices for meeting unique customer requirements—delivering the technical services to ensure your network deployment and ongoing maintenance is successful. Whether it is an essential network deployment and support need or a highly customized application, ProServices brings the expertise to ensure customer satisfaction.

### ■ Comprehensive Training and Certification Services.

ADTRAN provides innovative training solutions designed with a focus toward varying skill levels and job functions. Professional certification programs are designed to help customers structure and individualize continuing education needs. Access to the certification and training programs includes both free and fee-based options. Sessions are available both on-and off-site, using Instructor-Led Training (ILT); Computer-Based Training (CBT); or virtual classroom training with real-time, Web-enabled classes.



**Unified Communications**  
Software and Appliances



**IP Business Gateway for Trunking and Hosted VoIP**  
NetVanta 6000 Series



**Multiservice Access Router**  
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**IP Business Gateways for Business Trunking**  
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**Modular Access Router**  
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**Fixed-port Access Router**  
NetVanta 3100



**Ethernet Switch**  
NetVanta 1200/1500 Series



**Access Points**  
Bluesocket® 1800/1900 Series



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**TL9000**

TL191270



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